

**FINAL**

Site Investigation Work Plan  
Noah Webster Elementary School Burn Site  
City of San Diego

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# 1. Introduction

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The California Integrated Waste Management Board (CIWMB) Closed, Illegal and Abandoned Site (CIA) program investigates solid waste disposal sites and provides site data and documentation to quantify requirements for both enforcement and potential clean-up activities by the CIWMB Solid Waste Cleanup Program (AB 2136). Depending on the types of wastes at the site, intrusive investigation and environmental sampling may be necessary to determine if hazardous materials are present for the purpose of scoping enforcement and remediation work or referral to either the Regional Water Quality Control Board (RWQCB) or the Department of Toxic Substances Control (DTSC).

Typically, municipal burnsites contain heavy metals such as lead, nickel, cadmium, chrome and zinc, although other metals such as copper, iron and aluminum may also be present. Other constituents of concern may be total petroleum hydrocarbons (TPH) as benzene, toluene, ethylbenzene and xylene (BTEX) or diesel, organochlorine pesticides and polychlorinated biphenyls (PCBs). Also depending on industrial and commercial or Department of Defense activity in the area low-level radiation-emitting sources could be a concern.

The Noah Webster Elementary School Burn Site is estimated to have been active from 1934 to 1941. The School was constructed in 1954-1955. Disposal activity included placing and burning municipal waste into a small canyon fill, which was later reconfigured when the school was constructed.

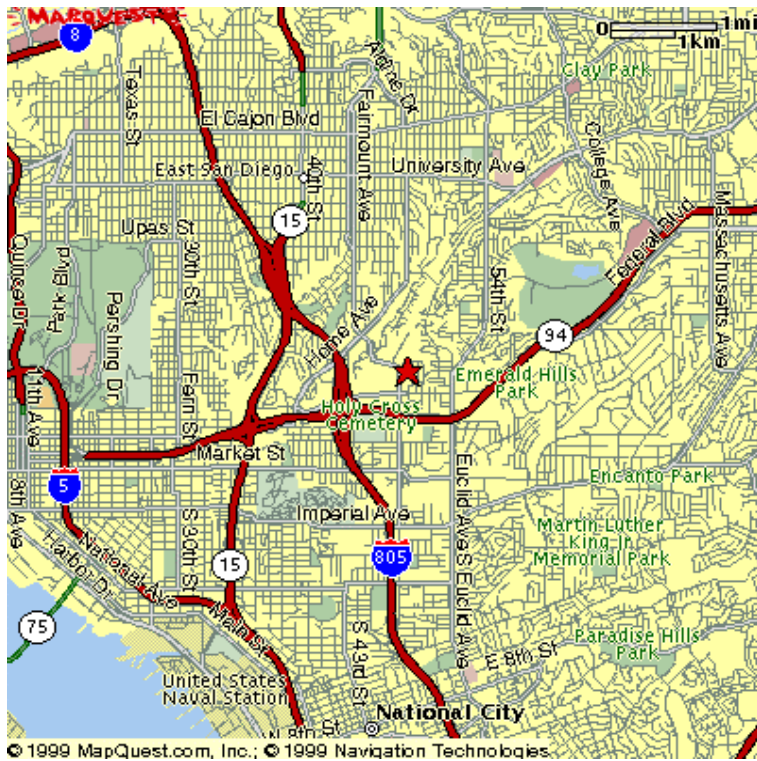
Statutory authority for investigating solid waste disposal sites is in California Public Resources Code (PRC) Section 45013, et seq.

## 1.1. Site Location and Description

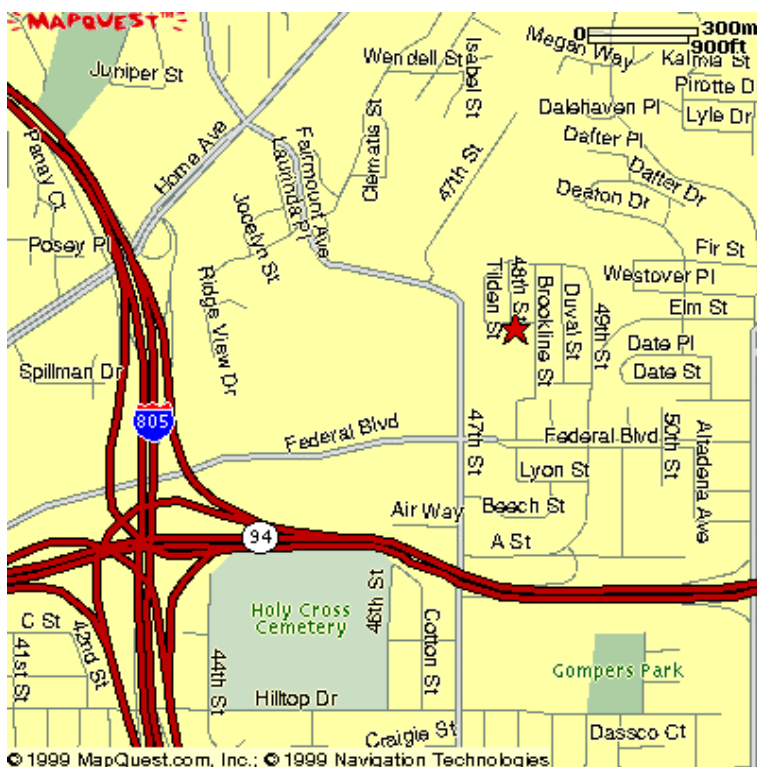
The site is owned by the San Diego Unified School District (SDUSD). It is located at 4801 Elm Street, San Diego, CA 92102. The property is owned by SDUSD and is described as Assessor Parcel Number (APN) 541-235-1000. The legal description is Horton's Purchase, portion of Lot 14 according to Map 283.

The area to be investigated is identified on Figure 3 (Page 16). The site map was prepared in 1954 by Clyde Huffbauer, Architect of San Diego.

**Figure 1.** Area Map of the Noah Webster Elementary School



**Figure 2.** Site Map



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## 1.2. Project Background

The Remediation, Closure & Technical Services (RCTS) Branch, was asked by the City of San Diego Local Enforcement Agency (LEA) to perform a site investigation of the Noah Webster Elementary School Burn Site, to: 1) determine the thickness of cover material placed over waste material at the site, 2) determine the approximate horizontal and vertical extent of the site and approximate volume of fill and 3) perform sampling and analysis of burned material and soil to determine general characteristics of the waste.

## 1.3. Project Purpose

The objective of the investigation is to provide site data that will allow the City LEA to determine if additional cover or reconfiguration of the waste is required to protect public health & safety. The site investigation may also be used to update current property records with respect to delineation of the disposal site footprint. The site data will include a characterization of the horizontal and vertical extent of the disposal area based on an intrusive investigation using Geoprobe Direct-Push equipment and constituent concentration data from analysis of waste samples.

## 1.4. Responsible Agency

The CIWMB will be responsible for preparing the site investigation and sampling plan, coordinating investigation objectives with the LEA and SDUSD and coordinating the field investigation and sampling activities with CIWMB contractors. CIWMB staff will oversee field investigation activities, preparation and coordination of the site investigation and sampling and analysis final report and providing the report to the City of San Diego LEA and SDUSD for further action. CIWMB will also place both the sampling report and site investigation report in Board Files and update the site's Solid Waste Information System (SWIS) database.

## 1.5. Project Organization

The site investigation and sampling and analysis plan and report preparation and coordination will be performed by CIWMB CIA Section Staff. CIA staff will also coordinate and oversee field investigation and sampling activities. CIWMB's Health and Safety Section will be responsible for preparing a site-specific health and safety plan and monitor on-site health and safety issues. As lead on the project, Mr. Glenn K. Young, P.E. may be reached at the California Integrated Waste Management Board 1001 "I" Street, P.O. Box 4025, Sacramento, CA 95812-4025 or by calling (916) 341-6696, FAX: (916) 319-7528. CIWMB's AB 2136 Environmental and Civil Engineering Consultant, Bryan A. Stirrat (BAS) and Associates will subcontract for a Geoprobe direct-push rig and operator and provide a registered geologist for logging Geoprobe samples for determining the cover thickness and depth of the fill material. BAS will survey sampling locations at the site in accordance with Figure 3 of this sampling and analysis plan and request that Underground Service Alert (USA) provide surveying and marking of site utilities. Surveying, logging and photographing of sampling locations will be performed by CIWMB staff.

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CIWMB staff will perform sample packaging, labeling and shipping to the CIWMB contracted laboratory. The sampling containers and laboratory analysis for the soil samples will be through CIWMB Contract IWM-C9037 with ExcelChem Environmental Laboratories, Inc. located at Roseville, CA.

## 1.6. Previous Investigations

The Noah Webster Elementary School site has been investigated by the LEA. The LEA performed a site investigation on December 12 and 20, 1999 and completed CIWMB Site Identification and Site Assessment Forms. In summary the investigation concluded that the disposal area is approximately 7 acres in size and is approximately 4-9 feet in depth. The site was operated from 1934-1941. Evidence of the site includes minor amounts of surface debris such as glass and ceramics on the western slope of the property. The disposal site area has been graded to drain and is covered with decomposed granite.

A set of site plans, prepared by Clyde Hufbrauer/Architect, City of San Diego in June 1954, were obtained from SDUSD, which include: 1) a drawing entitled, "site grading plan" (Sheet 1), 2) a topographic drawing of the dump site entitled "dump fill and test hole data" (Sheet 1A) which depicts original horizontal extent of the fill area (with former canyon topo elevations and fill's surface elevations), 3) a drawing entitled "plot plan and details" (Sheet 2), which depicts site drainage details, and 4) a drawing entitled "grading section and details" (Sheet 3), which depicts cross sections from the "grading plan" drawing from the grading plan. Portions of these plans are shown in Figures 3-7.

According to the "dump fill and test hole data" drawing, the waste was removed from an area east of a north-south line depicted as line A-A, which approximates the west end of the row of school buildings, and was placed in areas west of the line. The test hole data for the fill area removed showed that the waste was between 4 and 9.5 feet thick. The approximate area of fill removed was 1.55 acres and the volume of fill removed was approximately 15,000 cubic yards. Based on current elevations of the playground (elev. 219 to 221 ft) and elevations of the original dump surface, the 15,000 cubic yards of waste fill material was probably used to "fill" northern playground areas west of the A-A line. Since the northern portion of the playground area had a "ravine" with contour elevations ranging from 196 ft to 215 ft, it is likely that this was filled using the burn ash (rough calculation estimate that the ravine could hold approximately 15,000 cubic yards. Since the southern portion of the playground had to be "cut" from a slope that ranged from elev. 220 ft to 235 ft, it is less likely that burned material was relocated to the southern portion of the playground. It is expected that waste thickness could be up to 24 feet thick, but averaging 10 feet in thickness (reference elevation 196 to final elevation of 220 ft). Based on current elevations and surface elevations of the old dump site, cover thickness could be up to 5 feet thick. The cover material based on excavated canyon soils is probably a mixture of silty-loam/dense clay and decomposed granite as a final surface material. Burn ash and waste debris observed on the west slope may be "day-lighting" of the original fill. The fill is known to extend beneath 47<sup>th</sup> Street.

Geology at the site based on notes from the "dump fill and test hole" drawing indicates (reference Test Hole No. 1) silty-loam from ground surface to 2.5 ft below ground surface (bgs) and dense clay from 2.5 ft bgs to 7 ft bgs (4.5 ft thick). Surface materials located in the "old" canyon were decomposed granite and cobbles up to 6 inches.

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According to the “plot plan and details” drawing, a 21” concrete pipe runs east-west through the fill area (5-15 ft below existing grade).

To the CIWMB’s knowledge no other governmental agency, including the Regional Water Quality Control Board (RWQCB) or Department of Toxic Substances Control Division have conducted a previous investigation of the site.

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## 2. Project Objective

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### 2.1. Data Collection

Geoprobe direct push equipment will be used to conduct the site investigation to determine: 1) the thickness of the cover, 2) the horizontal and vertical extents of the disposal site and 3) chemical and physical characterization of the fill material for comparison to regulatory thresholds. Sampling will be conducted under the California Code of Regulations, Title 22, section 66261.10 et seq. for characterizing hazardous waste. The CIWMB will use regulatory limits established from the California Department of Toxic and Substance Control and federal levels for evaluating the soil/ash. Detailed analytical procedures are specified in section 3.9 of this plan. Since a portion of the burn-ash may need to be disposed of to a municipal solid waste landfill under clean-closure or waste reconfiguration remedial alternatives, it will be necessary to determine if the soil-ash is considered hazardous for the purpose of handling and disposition. The data from these procedures will be used to identify lead concentrations in surface soils and subsurface burn-ash.

### 2.2. Project Tasks

During the investigation of the Webster Elementary Burn site a sampling location reference grid will be established and tied to an established benchmark at the site. Relocation of planned sampling locations may be performed and the location referenced to the reference grid. Sampling at a location will entail use of the Geoprobe, which will drive a direct-push sampling tool down to native soil beneath the old fill.

Under the authoritative sampling protocol, the CIWMB field engineer may change individual sampling locations based on site-specific field conditions (including unforeseen obstructions, visible signs of contaminated soils or other factors). CIWMB anticipates that approximately 20 sampling locations will be required to adequately define the horizontal and vertical extent of the fill and cover thickness. Soil samples will be screened using a GMI 422 Gas Surveyor instrument and also screened for radioactivity using portable radiation detection equipment and then sent to a State of California certified hazardous waste laboratory for analysis. The hole created by the Geoprobe direct push sampling equipment will be screened using a GMI 422 Gas Surveyor instrument capable of measuring concentrations of methane, hydrogen sulfide, carbon dioxide, oxygen and carbon monoxide. The sampling holes will be filled with native soil and bentonite. Sampling activities are scheduled to occur in January 2001.

### 2.3. Expected Data

Chemical constituent concentration data obtained during this investigation will be evaluated to determine if additional sampling is necessary. Additional sampling may be performed if it is found that specific constituent levels exceed hazardous levels specified in 22 CCR, e.g. STLC for Lead is much greater than 5 mg/l. Based on information known about the site the following is expected:

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- a) Residual concentrations of heavy metals from the burning of solid waste (<1000 mg/kg). Metals detected most likely include lead, copper, nickel, zinc and chrome. Iron and aluminum also may be present.
  - b) Waste on western slope is daylighting from old surface of disposal site at elevation 215 ft
  - c) Waste thickness ranges from average of 10 ft to 24 ft
  - d) Cover material may be approximately 4-5 feet in thickness
  - e) Reconfigured waste limits approximate those shown in Figure 3

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## 3. Sampling Plan

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This sampling plan is intended to document the procedural and analytical requirements for this and any subsequent sampling events performed to collect soil and waste samples and to characterize areas of potential contamination from the Webster Elementary Burnsite. This plan was compiled after reviewing the US Environmental Protection Agency's, Region 9, guidance document "Instructions for the One-time Sampling Event Sampling and Analysis Plan" dated March 1998.

### 3.1. Sampling Methodology

Discrete sampling will be used to assess the burn ash and surrounding soils. The sampling will be conducted by using Geoprobe direct-push equipment to sample locations shown on Figure 3. Authoritative protocol may be used to allow the investigator the flexibility to move sampling locations, as necessary, to accommodate unforeseen field conditions. The following outline describes the proposed sampling:

- Geoprobe direct push equipment will drive sampling tool down to approximately 25 feet (or until contact between waste and native is encountered) to characterize the cover thickness and waste thickness. Burn ash and soil samples will be cut from acetate tubing used to line the Geoprobe sampling tool and capped. A total of 40 burn ash samples will be collected (two sample per location). One sample will be used as a discrete sample which will be analyzed for CAM 5 (lead, nickel, cadmium, chrome and zinc) the other sample used for compositing with others from a specified area.
- Areas will be defined for compositing samples for more extensive analysis. A total of 5 composite samples are proposed.

Each Geoprobe sample will be classified and logged by the BAS registered geologist and samples will be collected by visually identifying debris through the clear acetate liner of the Geoprobe sampling tool and then carefully cutting two 6-inch samples from the tube and capped. Once capped, the samples will be sealed, labeled and logged and packaged for shipping back to CIWMB laboratory contractor, ExcelChem.

Reusable sampling equipment will be decontaminated between each sampling event by the CIWMB consultant or their subcontractor. Decontamination will follow the procedures outlined in Section 3.5 of this sampling plan. Personnel who collect samples will be required to change their gloves between each sampling event.

### 3.2. Sampling Equipment

The following equipment will be necessary to perform the sampling

- |                                    |                              |
|------------------------------------|------------------------------|
| ▪ Geoprobe Direct Push Equipment   | ▪ Field log book             |
| ▪ Geoprobe Acetate Sampling Liners | ▪ Survey laths               |
| ▪ GMI 422 Gas Surveyor Instrument  | ▪ First aid kit and eye wash |

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- Plastic end caps for acetate tubing
  - Chain of custody forms and custody seals
  - Decontamination equipment (2 ½ -gallon sprayer, non-phosphate detergent, disposable brush, paper towels, cotton towels, polyethylene sheeting)
  - Mailing labels and markers
  - Cooler and ice or blue ice
  - Packing and duct tape

### 3.3. Sampling Procedures

Burn-ash and soil samples will be collected using Geoprobe direct push equipment. At each sample location Geoprobe direct-push equipment will be used to drive the sampling tool through the cover and waste into native soil beneath the fill.

Subsurface waste and soil samples will be collected by visually identifying debris through the clear acetate liner of the Geoprobe sampling tool and cutting out a six-inch section and capping the ends with plastic cap plugs. Upon completion of sampling at a location the hole will be screened using a GMI 422 Gas Surveyor and a measurement taken for CH<sub>4</sub>, CO<sub>2</sub>, H<sub>2</sub>S, CO and O<sub>2</sub>. The hole will then be filled with native soil and bentonite.

After each sample is collected it will be placed in a laboratory-supplied container, labeled, logged on the chain-of-custody document, screened for radioactivity, sealed, and stored in an ice chest that is cooled to 4 degrees Fahrenheit. The coolers will be shipped to ExcelChem via overnight Federal Express shipment.

### 3.4. Sample Locations

Although sampling locations are proposed in Figure 3, exact soil sampling locations will be determined in the field based on accessibility, the presence of unforeseen impedances or other factors. Final soil sample locations will be recorded in the field logbook and staked in the field when sampling is completed. A survey crew will locate each sampling location on the final site map. The map will be provided in a final site investigation and sampling and analysis report.

### 3.5. Decontamination Procedures

All equipment that comes into contact with potentially contaminated soil/burn ash will be decontaminated in a predesignated area. Disposable equipment intended for one-time use will not be decontaminated, but will be packaged for appropriate disposal. Decontamination will occur prior to and after each use of a piece of equipment. All sampling devices used, including trowels and augers, will be decontaminated by CIWMB staff.

The following decontamination procedures for primary contaminant, inorganic (metals):

1. Non-phosphate detergent and tap-water (bottled water) wash, using a brush if necessary
2. Tap-water rinse
3. 0.1 N nitric acid rinse
4. Deionized/distilled water rinse 2x

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### 3.6. Sample Containers and Preservation

Pre-cleaned containers will be supplied by the laboratory and will not be rinsed prior to sample collection. No preservative will be added to the containers.

### 3.7. Disposal of Residual Materials

In the process of collecting environmental samples at the Noah Webster Elementary School Burn Site, the CIWMB sampling team will generate different types of potentially contaminated investigation-derived waste (IDW) that may include:

- Used personal protective equipment (PPE)
- Disposable sampling equipment
- Decontamination fluids

The U.S. EPA's National Contingency Plan requires management of IDW generated during sampling comply with all applicable or relevant and appropriate requirements to the extent practicable. The IDW will contain minor residual amount of the soil/burn ash. These wastes are not considered hazardous and will be disposed of at a municipal landfill. Used PPE and disposable equipment will be double bagged and placed in municipal refuse dumpster. Any PPE and disposable equipment that is to be disposed of which can still be used will be rendered inoperable before disposal. Decontamination fluids that will be generated during sampling will consist of nitric acid, deionized water, residual contaminants, and water with non-phosphate detergent. The volume and concentration of the decontamination fluid will be sufficiently low to allow disposal at the site or sampling area. This minimal volume of decontamination fluid will be disposed of to the sanitary sewer system.

If hazardous or radioactive material are found during sampling screening activities, appropriate level of notification and response procedures will be implemented in accordance with the Site Specific Health and Safety Plan.

### 3.8. Analytes of Concern

Analytes of concern at this site are residual heavy metals from burning solid waste and any unburned organic materials left in the soil matrix.

### 3.9. Analytical Procedures

Each sample container's headspace will be tested using the GMI 422 Gas Surveyor. After field screening the sample containers will be capped, sealed and labeled (see packaging procedures), and sent to CIWMB's contract laboratory, ExcelChem, where composite samples will be analyzed for CAM 17 metals, pH, reactivity, ignitability, TPH BTEX/Diesel (EPA Method 602/8020/8015m), organochlorine pesticides/PCBs (EPA Method 608/8080) and WET (to determine if STLC is exceeded). Discrete samples will be analyzed for California Assessment Manual (CAM) 5 metals by the Total Test procedure using EPA Method 6010/7000. Samples with the highest concentrations of lead will also be analyzed for CAM-5 metals using the Waste Extraction Test (WET) procedure (EPA Method 6010) to determine if Soluble Threshold Limit Concentration (STLC) limits are exceeded. If

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the WET results for any other metal not in the CAM-5 analysis exceed by 10 times the STLC regulatory level, a separate WET analysis for that metal will be performed. Selected burn ash samples will also be tested for semivolatiles (EPA method 8270C).

### 3.10. Anticipated Cost

Based on discussions with ExcelChem Analytical Laboratory the following sampling costs are presented:

EPA METHOD	PARAMETER	UNIT COST	# SAMPLES	COST
6010	CAM 5 Metals	\$50	20	\$1000
6010/7417	CAM 17 Metals	\$130	5	\$650
22CCR WET	STLC (>10X)	\$60	5	\$300
608/8080	O-pest/PCBs	\$100	5	\$500
602/8020/8015m	TPH/BTEX/d	\$100	5	\$500
8270	Semi-Volatiles	\$300	5	\$1500
			<b>Total</b>	<b>\$4450</b>

### 3.11. Field Quality Control

One field duplicate sample will be collected simultaneously with a standard sample from the same source under identical conditions into a separate sample container. The duplicated sample is treated independently of its counterpart in order to assess laboratory performance through comparison of the results.

The duplicate samples will be collected at a random location that demonstrates elevated levels of metals based on field screening results. Sufficient soil will be collected from the sample location to prepare a primary and duplicate sample from a single batch of soil. The soil sample will be homogenized with a trowel in a sample-dedicated one-gallon disposable pail or a decontaminated stainless steel mixing bowl, and then transferred to each sample container for both regular and duplicate sample analyses.

### 3.12. Laboratory Quality Control

The analytical laboratory will perform Quality Control (QC). The QC will include project specific QC, method blank results, laboratory control spike, and matrix spike results.

1. Project Specific QC – No project specific QC has been requested by the CIWMB
2. Method Blank Results – A method blank is a laboratory-generated sample that assesses the degree to which laboratory operations and procedures cause false-positive analytical results for the CIWMB samples. The method blank results associated with the samples will be included with the analytical results.

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3. Laboratory Control Spike – A Laboratory Control Spike (LCS) is a sample that is spiked with known analyte concentrations, and analyzed at approximately 10 percent of the sample load in order to establish method-specific control limits. The LCS results associated with CIWMB samples will be attached on the LCS and LCS Duplicated Analysis Report.
  4. Matrix Spike Results – A matrix spike is a sample that is spiked with known analyte concentrations and analyzed at approximately 10 percent of the sample load in order to establish method-specific control limits. The matrix spike results associated with CIWMB samples will be attached on the Matrix Spike and Matrix Spike Duplicate Analysis Report.
  5. Accuracy – Accuracy will be measured by percent recovery as defined by:

$$\% \text{ Recovery} = \frac{(\text{measured concentration}) \times 100}{(\text{actual concentration})}$$

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## 4. Documenting and Reporting

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### 4.1. Field Notes

A field logbook will be used to document the vital project and sample information. At a minimum, the following sample information will be recorded:

- Sample location and description
- Site or sample area sketch showing sample location and measured distances
- Sampler's name(s)
- Date and time of sample collection
- Designation of sample as composite or grab
- Type of sample (soil, sediment or water)
- Type of sampling equipment used
- Field instrument reading, if applicable
- Field observations and details related to analysis or integrity of samples (e.g., weather conditions, noticeable odors, colors, etc.)
- Preliminary sample descriptions
- Sample preservation
- Sample identification numbers and explanatory code
- Name of recipient laboratory

In addition to the sampling information, the following specific information will also be recorded in the logbook:

- Team members and their responsibilities
- Time of arrival and departure
- Deviations from the sampling plan
- Level of health and safety protection

### 4.2. Photographs

Photographs will be taken at the sampling location and at surrounding areas. The photos will verify information entered in the field logbook. Each photo taken will be written in the logbook with the approximate time, date, and location.

### 4.3. Labeling

All samples collected will be labeled in a clear and precise way for proper identification for tracking in the laboratory. Each sample will reference the sample date, the type of sample (S – surface; B – subsurface), and the sample point identification as shown on the pin flag.

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#### 4.4. Chain-of-Custody

A chain-of-custody record will accompany all sample shipments. Shipped samples will have a custody seal placed across the lid of each sample container. All custody seals will be signed and dated.

#### 4.5. Packaging and Shipment

All sample containers will be placed in a strong-outside shipping container and will have the drain plug sealed, if applicable, to prevent melted ice from leaking out of the cooler. If ice is used to cool the samples, the ice will be packed in a double zip-lock bag. Special care will be provided to secure and prevent damage to the sample containers.

#### 4.6. Reporting

Once the analytical results are received and evaluated, CIWMB will prepare a sampling report describing the nature of the waste and discuss the analytical results. The CIWMB anticipates submitting the sampling report to the LEA and SDUSD within 30 days after receipt of the analytical results.

FIGURE 3. Noah Webster Elementary Burns Site Grading Plan (Sheet 1) Sampling Location Map

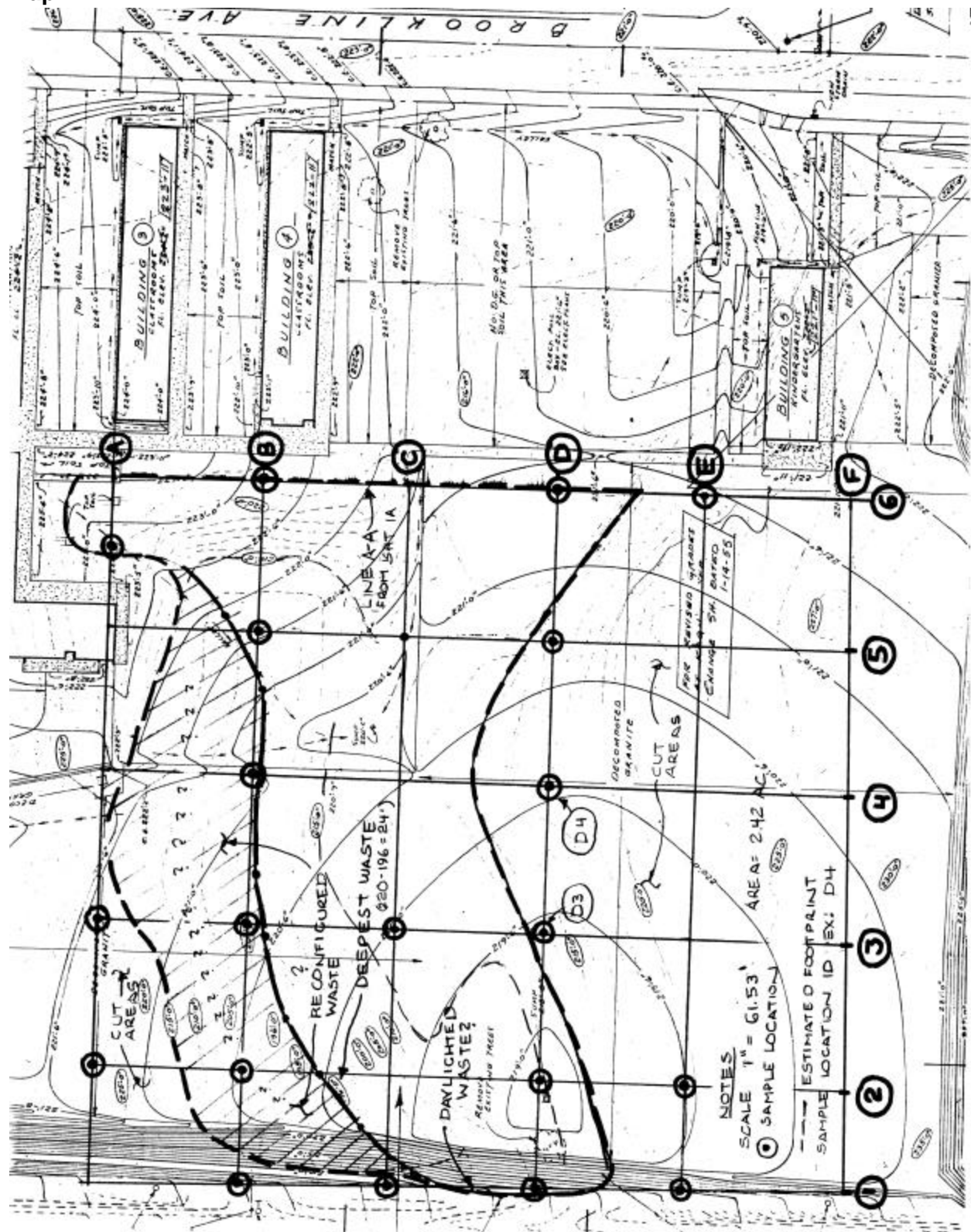


FIGURE 4. Noah Webster Elementary Burnsite Dump Fill & Test Hole Data (Sheet 1A)

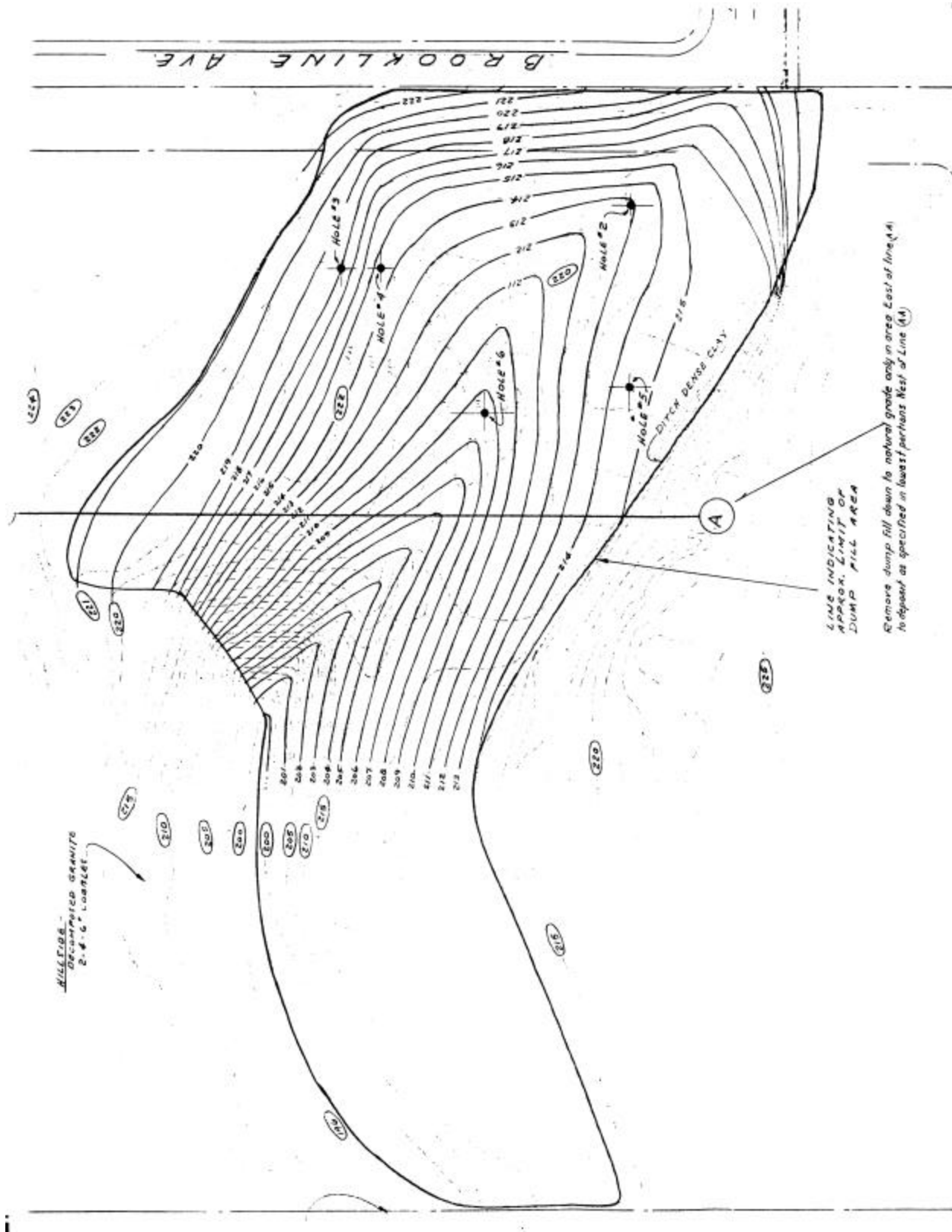
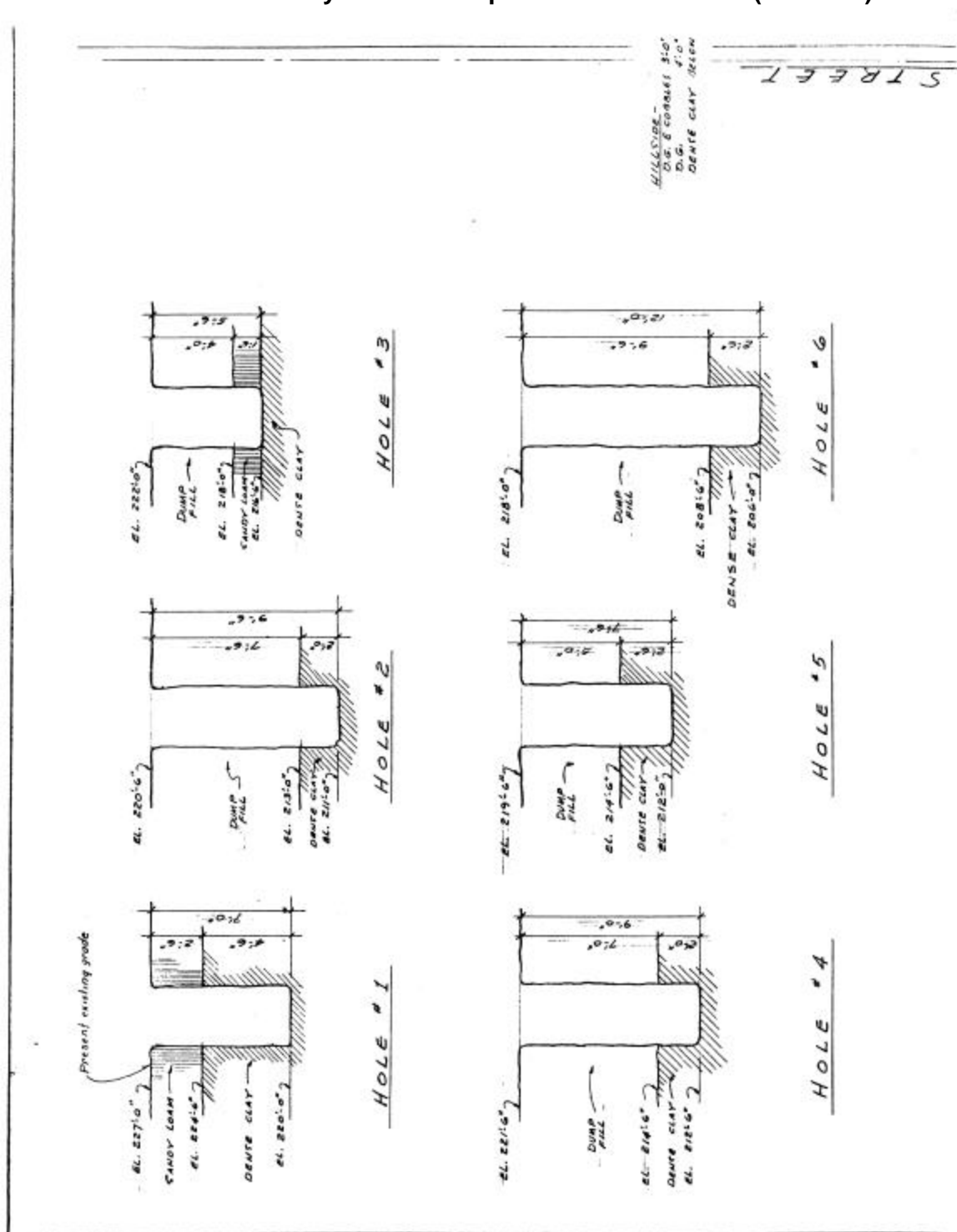


Figure 5. Noah Webster Elementary School Dump Fill & Test Hole Data (Sheet 1A)



This is a detailed site plan for a military installation, showing buildings, roads, and fencing. The plan includes labels for "BUILDING 3 - CLARKE HALL", "BUILDING 4 - CLARKE HALL", "BUILDING 5 - CLARKE HALL", and "BUILDING 6 - CLARKE HALL". It also shows various roads like "ROAD 1", "ROAD 2", and "ROAD 3", and a "TOP OF BANK" line. Dimensions and elevations are provided throughout the drawing.

Figure 7. Noah Webster Elementary School Grading Sections and Details (Sheet 3)

